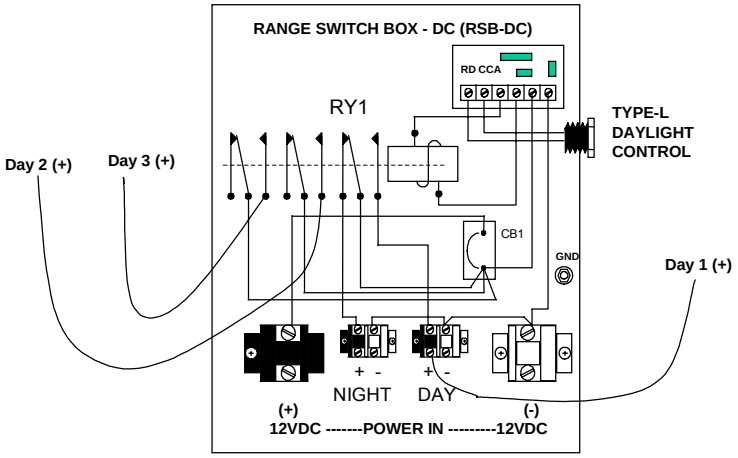
Ocean Engineering Technical Data Sheet
RSB Mods for High-Intensity Day/Night Ranges

Range Switch Boxes (RSB-DC and RSB-AC) are designed to control standard day/night ranges containing daytime optics of up to 200 Watts (RSB-DC) or 2,000 Watts (RSB-AC). These power ratings are based on maximum current handling capabilities of the hardware. More specifically, the power relays that perform switching between daytime and nighttime operation have contact ratings of 20 amps max (please DO NOT exceed this current rating). Using standard CG AtoN equipment, this means that the RSB-DC can safely control the operation of up to two standard 100 Watt 12VDC daytime range lights; and, the RSB-AC can safely control up to two standard 1,000 Watt 120VAC daytime range lights. Fortunately, most day/night ranges in the Coast Guard fall within this category and no further modifications are necessary.

Occasionally, however, the need arises for higher-intensity daytime range lights in a day/night range system. In order to safely accommodate the higher currents associated with the higher intensities, the RSB(s) must be modified. Shown below are the three most common non-standard, higher-intensity configurations. These configurations require modification(s) to the RSB(s) as described under each heading. If your requirement calls for intensities higher than those shown below, please contact the Signal and Power Team at HQ for further assistance (POC information is included under notes).

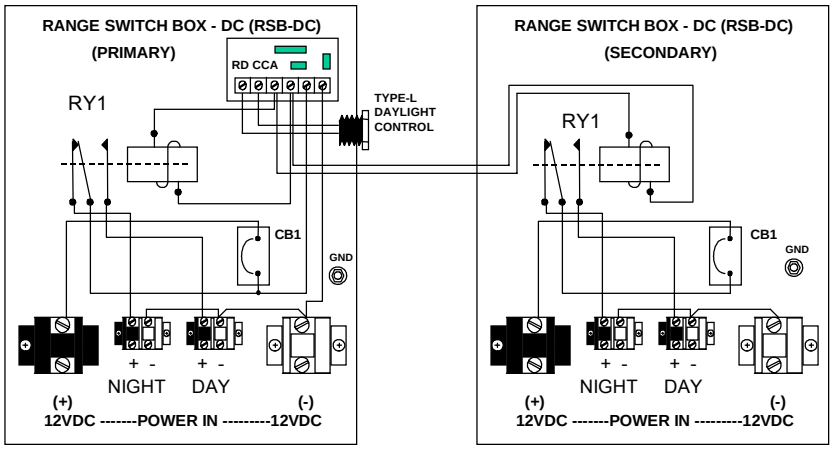
Three (3) 100 Watt 12VDC Daytime Optics. If your intensity requirements call for *three (3) 100 Watt 12VDC daytime optics*, the following modification must be made to the RSB-DC:

- ► Replace the original SPDT MSD relay (RY1) with the following **3PDT** relay:
  MSD p/n: 425-XCX-W-12D
- ► Replace the original 30A Heinemann circuit breaker (CB1) with the following **40A** breaker:
  Heinemann p/n: AM1--B8-A-0040-10N
  (Fortunately, since both replacement parts have the same mounting dimensions as the originals, you should have no problems swapping them out. The 3PDT relay is slightly larger, however.)
- ► Run a separate negative (-) feeder to each daytime light from any available negative (-) terminal on the RSB-DC (you'll have to "double-bug" off two negative (-) terminals).
- ► Perform wiring changes and additions as necessary to match the following diagram:



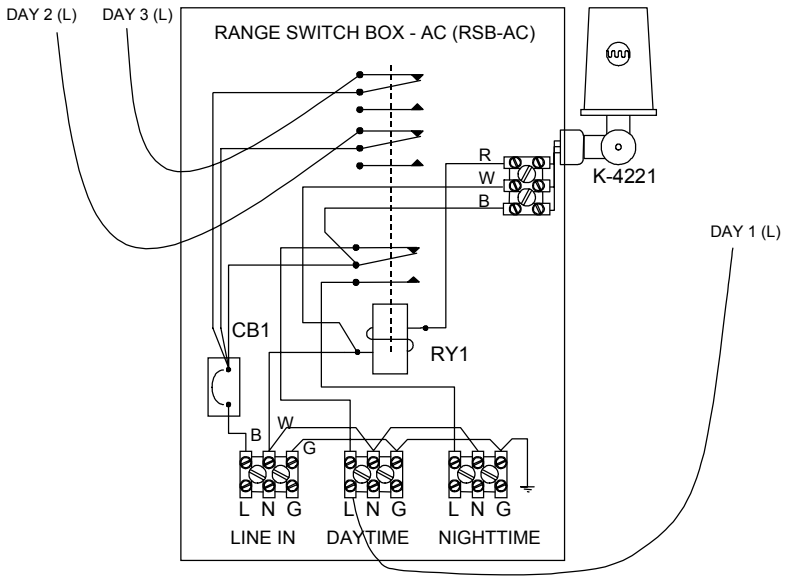
<u>Four (4) 100 Watt 12VDC Daytime Optics</u>. If your intensity requirements call for *four (4) 100 Watt 12VDC daytime optics*, you must obtain and use two (2) RSB-DCs. Select and label one RSB-DC as the Primary unit and the other as the Secondary. The total lamp load will be split equally between the two RSBs with each unit driving two (of the four) daytime range lights. The Primary unit's photoresistor (daylight control) will control the operation of all four lights. The nighttime range light should be connected to and controlled by the Primary unit. No parts substitutions are required in this case.

- ► Remove the Relay Driver CCA and all associated wires from the Secondary unit. You should keep this Relay Driver CCA in a safe place as a spare for the Primary unit.
- ► Remove the Type L daylight control from the Secondary unit. You may use the resulting opening as an entry for the new relay coil wires coming in from the Primary unit (as described next).
- ► Connect another pair of #18 AWG red wires to the Primary unit's Relay Driver CCA terminals labeled "R" and "R" and run them out to the Secondary unit's relay coil terminals. At the wire entry/exit points, properly-sized stuffing tubes with packing glands must be used at both units to seal out the environment.
- ► Run separate properly-sized power feeders from the power source (usually the charge controller) to each RSB-DC.



Three (3) 1,000 Watt Daytime Optics. If your intensity requirements call for *three (3) 1,000 Watt 120VAC daytime optics*, the following modification must be made to the RSB-AC:

- ► Replace the original SPDT MSD relay with the following **3PDT** relay:
  MSD p/n: 425-XCX-W-120A
- ► Replace the original 25A Heinemann circuit breaker with the following **40A** breaker:
  Heinemann p/n: AM1--A8-A-0040-10E
  (Fortunately, since both replacement parts have the same mounting dimensions as the originals, you should have no problems swapping them out. The 3PDT relay is slightly larger, however.)
- ► Run a separate neutral feeder to each daytime light from any available neutral (N) terminal (neutral (N) terminals of both DAYTIME and NIGHTTIME terminal blocks will have to be "double-bugged"). All grounds (G) must be terminated at any available ground (G) terminal at the RSB-AC as well.
- ► Perform wiring changes and additions as necessary to match the following diagram:



Notes:

1. Contact MSD by e-mail at info@magnecraft.com for local parts distributors and availability information (or check their web site: http://www.magnecraft.com).

2. Distributor information for Heinemann breakers is available at Eaton/Heinemann's web site: http://www.commercialcontrols.eaton.com/cktbrkr.htm.

3. If switching and/or flash synchronization is required, do not use RSB(s). The Range Light Controller (RLC) provides synchronized switching between daytime and nighttime operation as well as synchronized flash capabilities.

4. For further information or assistance, the Signal & Power Team POC is Mr. Kam Agi, 202-267-1872, kagi@comdt.uscg.mil.